WATER SUPPLY OUTLOOK FOR COLORADO AND NEW MEXICO

U. S. DEPARTMENT of AGRICULTURE ★ SOIL CONSERVATION SERVICE

Collaborating with

COLORADO STATE UNIVERSITY EXPERIMENT STATION
STATE ENGINEER of COLORADO
and STATE ENGINEER of NEW MEXICO

AS OF
APR. 1, 1977

Data included in this report were obtained by the agencies named above in cooperation with Federal, State and private organizations listed inside the back cover of this report.

TO RECIPIENTS OF WATER SUPPLY OUTLOOK REPORTS:

Most of the usable water in western states originates as mountain snowfall. This snowfall accumulates during the winter and spring, several months before the snow melts and appears as streamflow. Since the runoff from precipitation as snow is delayed, estimates of snowmelt runoff can be made well in advance of its occurrence. Streamflow forecasts published in this report are based principally on measurement of the water equivalent of the mountain snowpack.

Forecasts become more accurate as more of the data affecting runoff are measured. All forecasts assume that climatic factors during the remainder of the snow accumulation and melt season will interact with a resultant average effect on runoff. Early season forecasts are therefore subject to a greater change than those made on later dates.

The snow course measurement is obtained by sampling snow depth and water equivalent at surveyed and marked locations in mountain areas. A total of about ten samples are taken at each location. The average of these are reported as snow depth and water equivalent. These measurements are repeated in the same location near the same dates each year.

Snow surveys are made monthly or semi-monthly from January 1 through June 1 in most states. There are about 1900 snow courses in Western United States and in the Columbia Basin in British Columbia. Networks of automatic snow water equivalent and related data sensing devices, along with radio telemetry are expanding and will provide a continuous record of snow water and other parameters at key locations.

Detailed data on snow course and soil moisture measurements are presented in state and local reports. Other data on reservoir storage, summaries of precipitation, current streamflow, and soil moisture conditions at valley elevations are also included. The report for Western United States presents a broad picture of water supply outlook conditions, including selected streamflow forecasts, summary of snow accumulation to date, and storage in larger reservoirs.

Snow survey and soil moisture data for the period of record are published by the Soil Conservation Service by states about every five years. Data for the current year is summarized in a West-wide basic data summary and published about October 1 of each year.

COVER PHOTO: SNOW COURSE MEASUREMENTS BY A SURVEY TEAM IN UTAH'S WASATCH RANGE.
ORC-254-10

PUBLISHED BY SOIL CONSERVATION SERVICE

The Soil Conservation Service publishes reports following the principal snow survey dates from January 1 through June 1 in cooperation with state water administrators, agricultural experiment stations and others. Copies of the reports for Western United States and all state reports may be obtained from Soil Conservation Service, West Technical Service Center, Room 510, 511 N.W. Broadway, Portland, Oregon 97209.

Copies of state and local reports may also be obtained from state offices of the Soil Conservation Service in the following states:

STATE	ADDRESS
Alaska	Room 129, 2221 East Northern Lights Blvd., Anchorage, Alaska 99504
Arizona	Room 3008, 6029 Federal Building, Phoenix, Arizona 85025
Colorado (N. Mex.)	P. O. Box 17107, Denver, Colorado 80217
Idaho	Room 345, 304 N. 8th. St., Boise, Idaho 83702
Montana	P.O. Box 98, Bozeman, Montana 59715
Nevada	P. O. Box 4850, Reno Nevada 89505
Oregon	1220 S.W. Third Ave., Portland, Oregon 97204
Utah	4012 Federal Bldg., 125 South State St., Salt Lake City, Utah 84138
Washington	360 U.S. Court House, Spokane, Washington 99201
Wyoming	P. O. Box 2440, Casper, Wyoming 82602

PUBLISHED BY OTHER AGENCIES

Water Supply Outlook reports prepared by other agencies include a report for California by the Water Supply Forecast and Snow Surveys Unit, California Department of Water Resources, P. O. Box 388, Sacramento, California 95802 --- and for British Columbia by the Department of Lands, Forests and Water Resources, Water Resources Service, Parliament Building, Victoria, British Columbia

USDA-SCS-PORTLAND, OR 1976

WATER SUPPLY OUTLOOK FOR COLORADO AND NEW MEXICO

and

FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS

Issued by

R. M. DAVIS

ADMINISTRATOR
SOIL CONSERVATION SERVICE
WASHINGTON, D.C.

Released by

ROBERT G. HALSTEAD

STATE CONSERVATIONIST
SOIL CONSERVATION SERVICE
DENVER, COLORADO

ALBERT W. HAMELSTROM

STATE CONSERVATIONIST
SOIL CONSERVATION SERVICE
ALBUQUERQUE, NEW MEXICO

In Cooperation with

JOHN PATRICK JORDAN

DIRECTOR
C S U
EXPERIMENT STATION

S. E. REYNOLDS

STATE ENGINEER
STATE OF NEW MEXICO

C. J. KUIPER

STATE ENGINEER
STATE OF COLORADO

Report prepared by

JACK N. WASHICHEK, Snow Survey Supervisor
BERNARD A. SHAFER, Assistant Snow Survey Supervisor
JUDY R. TEILBORG, Statistical Assistant

SOIL CONSERVATION SERVICE
SNOW SURVEY UNIT
P.O. BOX 17107
DENVER, COLORADO 80217

TABLE OF CONTENTS

WATER SUPPLY OUTLOOK BY MAJOR WATERSHED AREAS

Severe wind erosion may fill irrigation ditches with soil particles. Ditch cleanout will be important for efficient water delivery.

MEAGER COLORADO SNOWPACK COULD CHANGE CROPPING PATTERNS

STRETCH YOUR IRRIGATION WATER

If your irrigation water supply will be short this year, here are some things you should do:

I. Consider changing to crops which require less water.

Here is a rough comparison of consumptive use by several crops in southeastern Colorado:

Crop	Inches of Water
Spring Grain	18
Dry Beans	20
Grain Sorghum	22
Corn (Grain)	28
Pasture Grasses	32
Sugar Beets	35
Alfalfa	37*

*Although alfalfa will utilize water if available, it will survive with greatly reduced amounts.

II. Irrigate at Critical Periods

The critical (stress) periods for crops are as follows:

Alfalfa - Seedling stage and immediately after cutting.
Small Grain - Boot, bloom and early head stage.
Dry Beans - Early bloom and forming.
Potatoes - Need high soil moisture until potatoes are well-formed.
Corn - Tasseling and silking stage.
Sugar Beets - Seedling stage to maturity, but most critical in seedling stage.
Sorghum - Boot, bloom and milk to dough stages.

III. Do a Good Job of Irrigating

Some of the keys are:

1. Fill root zone early if possible. This is especially true for beets.
2. Measure the amount of water applied.
3. Use alternate row irrigation to increase infiltration.
4. Apply water only when needed based on soil moisture. If soil moisture is checked by the feel method the following guide tells when to irrigate:*

Soil	Feel or Appearance
Coarse Soils (like loamy sand)	Appears to be dry, will not form a ball with pressure.
Light Soils (like sand loam)	Appears to be dry, will not form a ball.
Medium Soils (like loam & silt loam)	Somewhat crumbly but hold together from pressure.
Fine & Very Fine Soils (like clay loam & silty clay loam)	Somewhat pliable, will ball under pressure.

*Potatoes should be irrigated before soil becomes this dry.

5. Use a "cutback" system is possible to improve irrigation efficiency.
6. Check with soil probe or auger to see if water penetration depth is even from one end of field to other.
7. Recover any tailwater and reuse it.

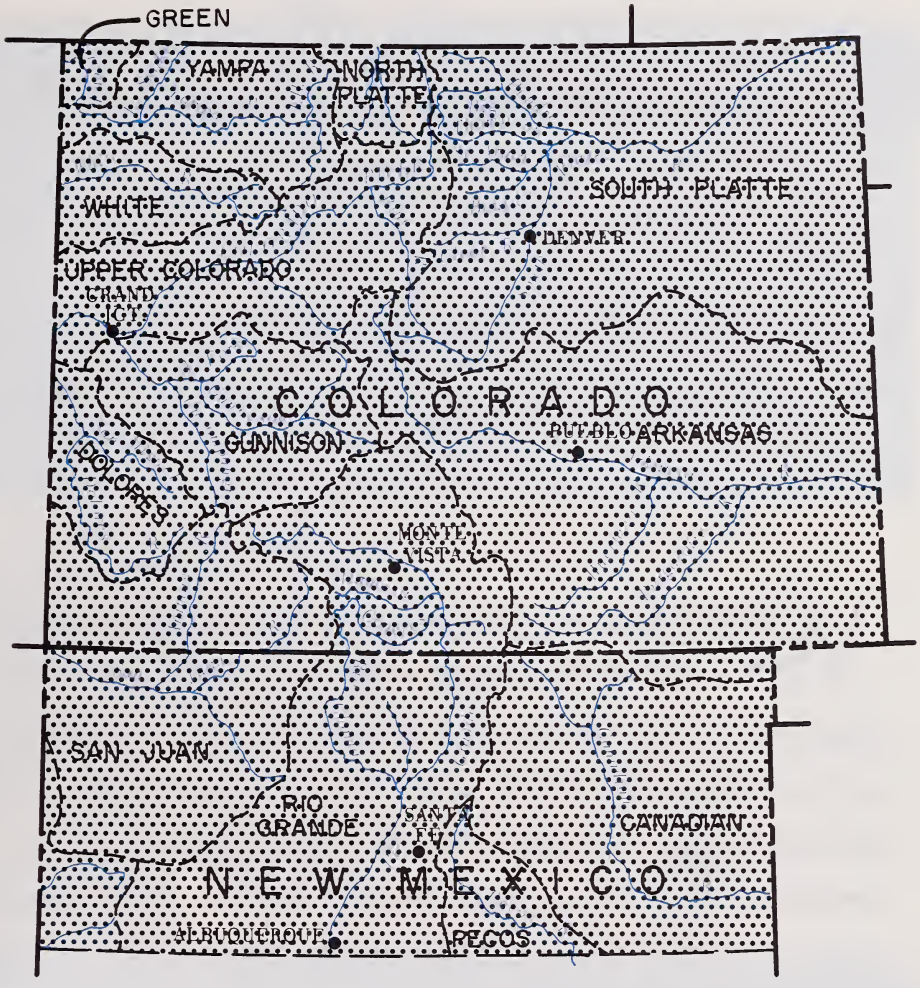
IV. Other Considerations

Plant population can be reduced to save water.
Control weeds.
Use recommended fertilizer amounts - Don't skimp just because water may be in short supply.

WATER SUPPLY OUTLOOK

as of

APRIL 1, 1977



GENERALLY ADEQUATE
100% OR MORE

LIMITED SHORTAGE
75% - 100%

SEVERE SHORTAGE
75% OR LESS

The map on this page indicates the most probable water supply as of the date of this report. Estimates assume average conditions of snow fall, precipitation and other factors from this date to the end of the forecast period. As the season progresses accuracy of estimates improve. In addition to expected streamflow, reservoir storage, soil moisture in irrigated areas, and other factors are considered in estimating water supply. Estimates apply to irrigated areas along the main streams and may not indicate conditions on small tributaries.

WATER SUPPLY CONDITIONS
as of
APRIL 1, 1977

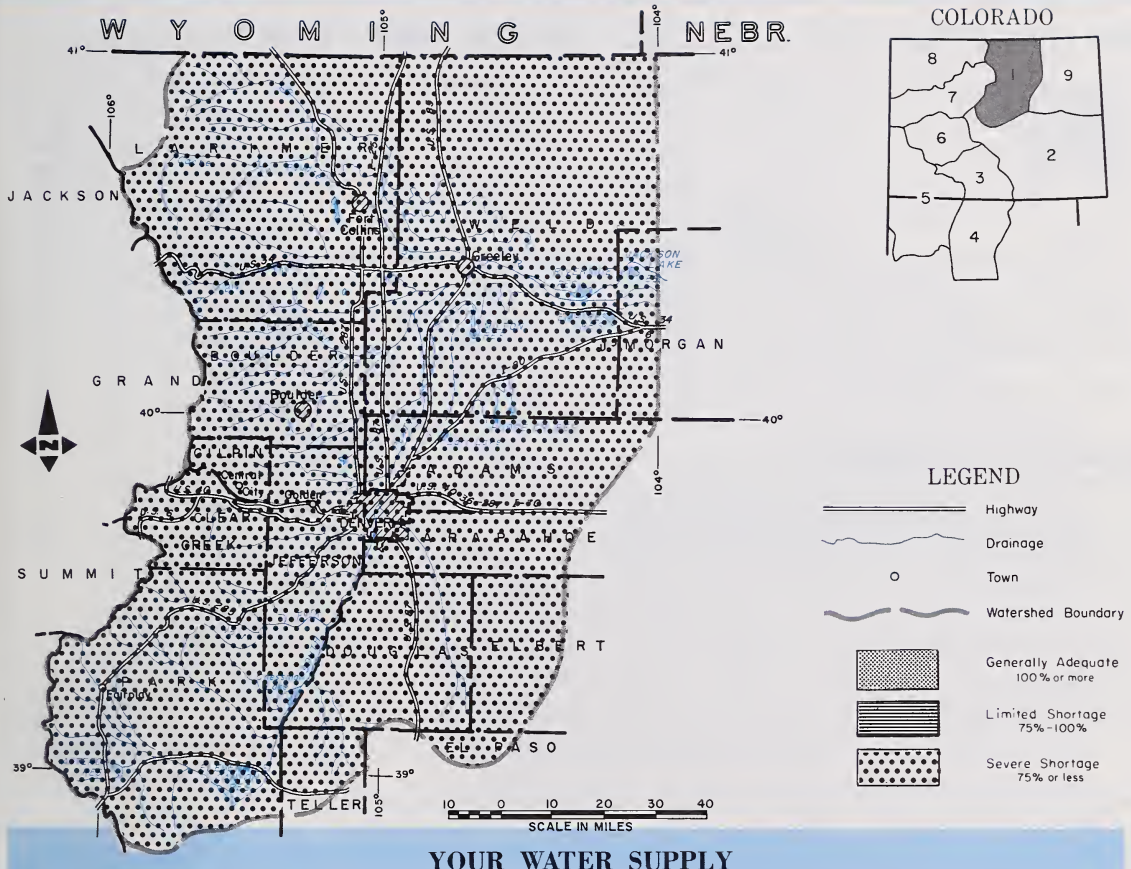
DURING THE MONTH OF MARCH THE MOUNTAIN SNOWPACK INCREASED SLIGHTLY AS A PERCENT OF NORMAL OVER MOST OF COLORADO AND REMAINED ABOUT THE SAME AS LAST MONTH IN NEW MEXICO. HOWEVER, APPROXIMATELY HALF OF THE SNOW COURSES MEASURED WERE MINIMUM OF RECORD FOR THIS TIME OF YEAR. THE OUTLOOK FOR WATER SUPPLIES THIS SUMMER REMAINS BLEAK. NEARLY ALL STREAMS IN COLORADO ARE FORECASTED TO FLOW NEAR OR BELOW PREVIOUS MINIMUMS. STREAMS IN NEW MEXICO WILL LIKELY FLOW BELOW AVERAGE BUT SHOULD BE ABOVE PREVIOUS MINIMUMS. WATER CONSERVATION AND RATIONING WILL BE NECESSARY THIS SUMMER.

COLORADO -- STORMS THIS PAST MONTH INCREASED THE SNOWPACK IN THE NORTHERN AND CENTRAL AREAS OF THE STATE BY FIVE TO EIGHTEEN PERCENT BUT IT STILL REMAINS MUCH BELOW NORMAL. THE SOUTHERN PART OF THE STATE INCREASED ONLY THREE TO EIGHT PERCENT OVER LAST MONTH. SOILS REMAIN DRY IN MOST AREAS. IF NORMAL PRECIPITATION IS RECEIVED, FORECASTS ARE FOR FLOWS NEAR THE MINIMUM OF RECORD FOR MOST STREAMS. RESERVOIR STORAGE IS NEAR AVERAGE THROUGHOUT THE STATE EXCEPT FOR THE ARKANSAS AND RIO GRANDE BASINS WHICH ARE WELL BELOW NORMAL.

NEW MEXICO -- THE OUTLOOK FOR WATER SUPPLIES FOR THIS SPRING AND SUMMER REMAINS MUCH THE SAME AS LAST MONTH. FLOWS ARE EXPECTED TO BE BELOW NORMAL ON ALL STREAMS. THE RIO GRANDE AND ITS MAJOR TRIBUTARIES SHOULD FLOW NEAR THE MINIMUM OF RECORD UNLESS MUCH ABOVE NORMAL SPRING AND SUMMER PRECIPITATION IS RECEIVED. THE MOUNTAIN SNOWPACK HAS STARTED ITS MELT IN MOST AREAS AND WILL BE GONE WITHIN THE NEXT MONTH. SOIL MOISTURE REMAINS POOR. CARRYOVER RESERVOIR STORAGE IS SLIGHTLY BELOW NORMAL BUT WILL STILL PROVIDE MUCH NEEDED SUPPLEMENTAL SUPPLY.

WATER SUPPLY OUTLOOK
FOR THE SOIL CONSERVATION DISTRICTS IN THE
SOUTH PLATTE RIVER WATERSHED IN COLORADO
as of
APRIL 1, 1977

U. S. DEPARTMENT OF AGRICULTURE · SOIL CONSERVATION SERVICE
CSU EXPERIMENT STATION, STATE ENGINEERS OF COLORADO AND NEW MEXICO



YOUR WATER SUPPLY

DURING MARCH SEVERAL STORMS RESULTED IN IMPROVING THE MOUNTAIN SNOWPACK ABOUT FIVE TO TEN PERCENT OF AVERAGE OVER LAST MONTH. MANY COURSES, HOWEVER, STILL MEASURED THE MINIMUM OF RECORD. MELT WILL SOON START AT THE LOWER ELEVATIONS BUT HIGHER SITES CAN STILL ACCUMULATE UNTIL THE MIDDLE OF MAY. ALL FORECASTS OF STREAMFLOW ARE NEAR THE MINIMUM OF RECORD. SOILS ARE STILL VERY DRY AND RESERVOIR STORAGE IS NINETY PERCENT OF NORMAL.

This report prepared by

JACK N. WASHICHEK—BERNARD A. SHAFER
SNOW SURVEY UNIT, SOIL CONSERVATION SERVICE
DENVER, COLORADO

Issued by

ROBERT G. HALSTEAD—STATE CONSERVATIONIST
DENVER, COLORADO

ROGER A. HANSEN—AREA CONSERVATIONIST
LA JUNTA, COLORADO

U.S. DEPARTMENT OF AGRICULTURE—SOIL CONSERVATION SERVICE

RODNEY M. ALT—AREA CONSERVATIONIST
GREELEY, COLORADO

STREAMFLOW FORECASTS (1000 Ac. Ft.) April—September

FORECAST POINT	FORE-CAST	% of Average	Average *
Big Thompson River at Drake (1)	42	39	107
Boulder Creek at Orodell	22	45	49
Cache La Poudre River at Canyon Mouth (2)	105	43	247
Clear Creek at Golden (3)	50	39	127
St. Vrain Creek at Lyons (4)	28	37	75

(1) Observed flow plus by–pass to power plants. (2) Observed flow minus trans–basin diversions plus municipal and irrigation diversions. (3) Observed flow minus diversion through August P. Cumlick Tunnel. (4) Observed flow plus change in storage in Price Reservoir.

WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply.

STREAM or AREA	Flow Period	
	Spring Season	Late Season
Bear Creek	Poor	Poor
Coal Creek	Poor	Poor
North Fork of South Platte	Poor	Poor
North Fork of Cache La Poudre	Poor	Poor
Ralston Creek	Poor	Poor
Rock Creek	Poor	Poor

SUMMARY of SNOW MEASUREMENTS

(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average *
Big Thompson	5	35	32
Boulder	3	58	48
Cache La Poudre	6	42	43
Clear Creek	6	79	64
Saint Vrain	3	36	29
South Platte	3	40	29

RESERVOIR STORAGE (Thousand Ac. Ft.) END OF MONTH

RESERVOIR	Usable Capacity	Usable Storage		
		This Year	Last Year	Average *
Antero	33	16	16	14
Barr Lake	32	29	27	25
Black Hollow	8	4	5	4
Boyd Lake	44	34	38	38
Cache La Poudre	10	0	7	8
Carter Lake	109	94	102	95
Chambers Lake	9	1	3	3
Cheesman	79	33	47	59
Cobb Lake	34	5	16	15
Eleven Mile	98	90	97	88
Fossil Creek	12	9	7	8
Gross	43	23	19	28
Halligan	6	3	2	5
Horsetooth	144	90	121	111
Lake Loveland	14	8	10	10
Lone Tree	9	3	5	7
Mariano	5	5	5	5
Marshall	10	4	5	5
Marston	18	17	14	15
Milton	24	19	16	14
Standley	42	30	33	19
Terry	8	6	6	5
Union	13	13	11	10
Windsor	19	10	15	12

* 1958–1972 period.

Return if not delivered
UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SNOW SURVEY UNIT
P.O. BOX 17107
DENVER, COLORADO 80217

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

POSTAGE AND FEES PAID
U. S. DEPARTMENT OF AGRICULTURE
AGR–101

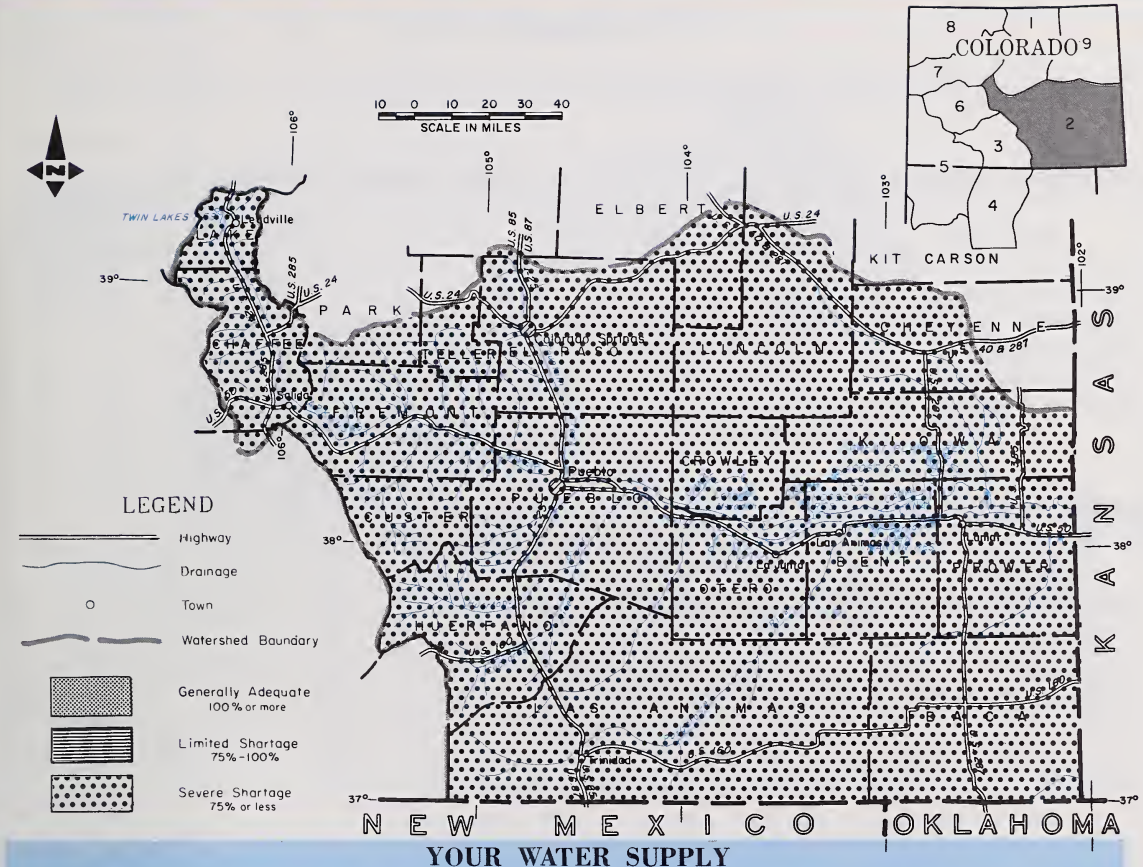
U.S. MAIL

FIRST CLASS MAIL

"The Conservation of Water begins with the Snow Survey"

WATER SUPPLY OUTLOOK
FOR THE SOIL CONSERVATION DISTRICTS IN THE
ARKANSAS RIVER WATERSHED IN COLORADO
as of
APRIL 1, 1977

U. S. DEPARTMENT OF AGRICULTURE · SOIL CONSERVATION SERVICE
CSU EXPERIMENT STATION, STATE ENGINEERS OF COLORADO AND NEW MEXICO



YOUR WATER SUPPLY

MARCH STORMS BROUGHT ONLY A MINIMAL IMPROVEMENT IN THE SNOWPACK ON THE MAINSTEM OF THE ARKANSAS. IT IS ONLY 50 PERCENT OF NORMAL. THE HEADWATERS OF THE CUCHARAS AND PURGATOIRE REMAIN THE HIGHEST AREAS IN THE STATE WITH 80 PERCENT OF AVERAGE. FORECASTS ON THE ARKANSAS INDICATE FLOWS NEAR THE MINIMUM OF RECORD. ONLY EXCEEDINGLY HIGH SPRING AND SUMMER PRECIPITATION COULD IMPROVE THE OUTLOOK. SOILS ARE EXTREMELY DRY.

This report prepared by

JACK N. WASHICHEK—BERNARD A. SHAFER
SNOW SURVEY UNIT, SOIL CONSERVATION SERVICE
DENVER, COLORADO

Issued by

ROBERT G. HALSTEAD—STATE CONSERVATIONIST
DENVER, COLORADO

ROGER A. HANSEN—AREA CONSERVATIONIST
LA JUNTA, COLORADO

U.S. DEPARTMENT OF AGRICULTURE—SOIL CONSERVATION SERVICE

D. W. GILLASPIE—AREA CONSERVATIONIST
ALAMOSA, COLORADO

STREAMFLOW FORECASTS (1000 Ac. Ft.) April—September

FORECAST POINT	FORE-CAST	% of Average	Average *
Arkansas River near Pueblo (1)	100	34	290
Arkansas River at Salida (1)	150	48	313
Cucharas River near La Veta	8	80	10
Huerfano River near Redwing	10	67	15
Purgatoire River at Trinidad	23	61	38

(1) Observed flow plus change in Clear Creek, Twin Lakes and Turquoise Reservoirs minus diversions through Busk Ivanhoe, Boustead, Divide, Twin Lakes and Homestake Tunnels and Ewing, Front Pass, Wurtz and Columbine ditches.

WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply.

STREAM or AREA	Flow Period	
	Spring Season	Late Season
Apishapa River	Fair	Poor
Fountain Creek	Fair	Poor
Grape Creek	Fair	Poor
Hardscrabble Creek	Fair	Poor
Monument Creek	Fair	Poor

SUMMARY of SNOW MEASUREMENTS

(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average *
Arkansas	9	53	51
Cucharas	1	87	91
Purgatoire	1	79	74

RESERVOIR STORAGE (Thousand Ac. Ft.) END OF MONTH

RESERVOIR	Usable Capacity	Usable Storage		
		This Year	Last Year	Average *
Adobe	62	0	0	17
Clear Creek	11	6	4	8
Cucharas	40	0	-	3
Great Plains	150	0	0	61
Horse Creek	27	10	8	7
John Martin	621	21	10	91
Meredith	42	0	0	14
Model	15	0	0	4
Turquoise	121	26	45	--
Twin Lakes	58	7	17	26

* 1958-1972 period.

Return if not delivered
UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SNOW SURVEY UNIT
P.O. BOX 17107
DENVER, COLORADO 80217

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

POSTAGE AND FEES PAID
U. S. DEPARTMENT OF
AGRICULTURE
AGR-101

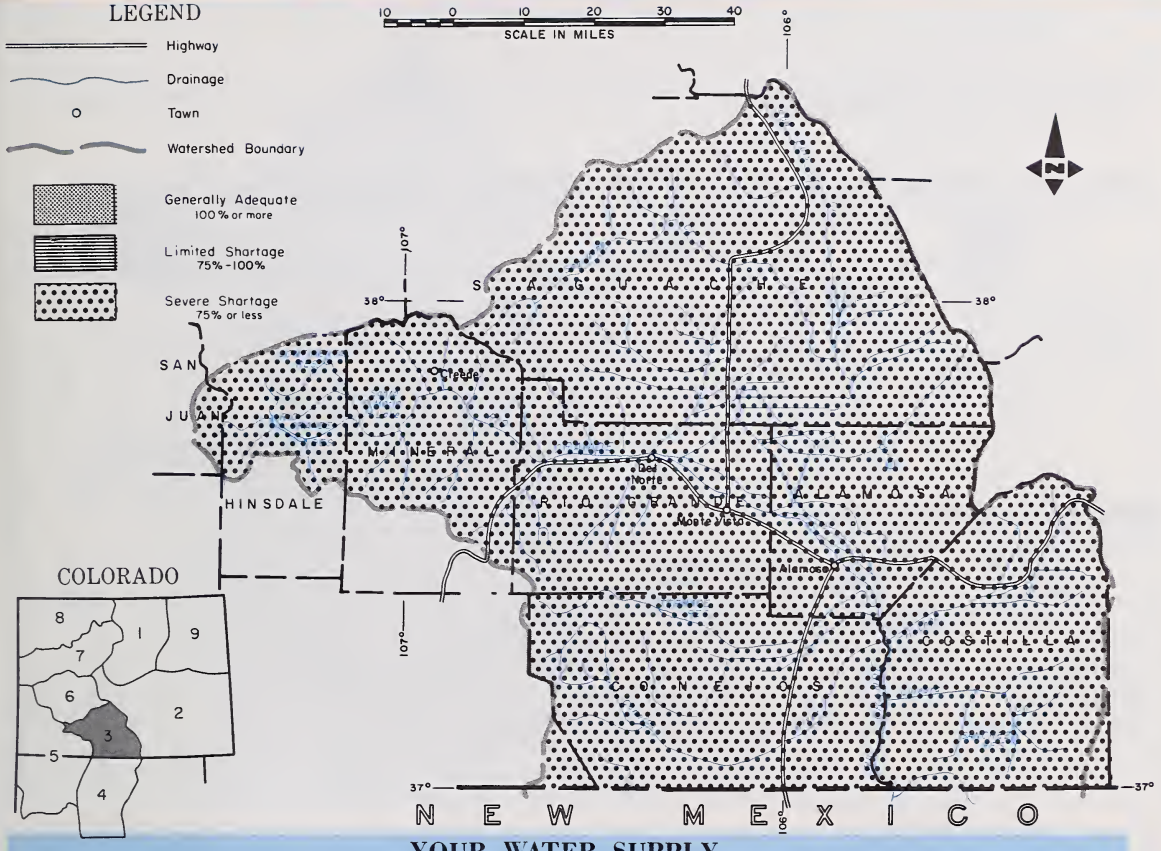
U.S.MAIL

FIRST CLASS MAIL

"The Conservation of Water begins with the Snow Survey"

WATER SUPPLY OUTLOOK
FOR THE SOIL CONSERVATION DISTRICTS IN THE
UPPER RIO GRANDE WATERSHED IN COLORADO
as of
APRIL 1, 1977

U. S. DEPARTMENT OF AGRICULTURE · SOIL CONSERVATION SERVICE
CSU EXPERIMENT STATION, STATE ENGINEERS OF COLORADO AND NEW MEXICO



YOUR WATER SUPPLY

THE OUTLOOK FOR SUMMER WATER SUPPLIES REMAINS EXTREMELY POOR. MARCH SAW NO IMPROVEMENT IN THE MOUNTAIN SNOWPACK. MOST WATERSHED SNOWPACKS ARE 70% BELOW NORMAL WITH THE EXCEPTION OF THE CULEBRA. IT IS 25% BELOW NORMAL. PROJECTIONS OF SPRING AND SUMMER STREAMFLOW ARE FOR FLOWS HALF OF NORMAL AND NEAR PREVIOUS MINIMUMS. WATER USERS WITH DIRECT DIVERSIONS WILL SUFFER MOST. DRY SOILS AND POOR CARRYOVER STORAGE MAKE THE SITUATION EVEN MORE SEVERE.

This report prepared by

JACK N. WASHICHEK—BERNARD A. SHAFER
SNOW SURVEY UNIT, SOIL CONSERVATION SERVICE
DENVER, COLORADO

Issued by

ROBERT G. HALSTEAD—STATE CONSERVATIONIST
DENVER, COLORADO

D. W. GILLASPIE—AREA CONSERVATIONIST
ALAMOSA, COLORADO

U.S. DEPARTMENT OF AGRICULTURE – SOIL CONSERVATION SERVICE

STREAMFLOW FORECASTS (1000 Ac. Ft.) April—September

FORECAST POINT	FORE-CAST	% of Average	* Average
Alamosa Creek above Terrace Reservoir	27	44	62
Conejos River near Mogote (1)	85	46	184
Culebra Creek at San Luis (2)	13	75	17
Rio Grande at 30 Mile Bridge (3)	70	58	121
Rio Grande near Del Norte (3)	230	49	468
South Fork of Rio Grande at South Fork	53	46	115

(1) Observed flow plus change in storage in Platoro Reservoir. (2) Observed flow plus change in storage in Sanchez Reservoir. (3) Observed flow plus change in storage in Santa Maria, Rio Grande and Continental Reservoirs.

WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply.

STREAM or AREA	Flow Period	
	Spring Season	Late Season
Saguache Creek	Poor	Poor
Sangre de Cristo Cr.	Poor	Poor
Trinchera Creek	Poor	Poor

SUMMARY of SNOW MEASUREMENTS

(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average *
Alamosa	–	–	–
Conejos	3	23	26
Culebra	2	77	75
Rio Grande	10	23	28

RESERVOIR STORAGE (Thousand Ac. Ft.) END OF MONTH

RESERVOIR	Usable Capacity	Usable Storage		
		This Year	Last Year	Average *
Continental	27	2	5	6
Platoro	60	13	14	9
Rio Grande	46	4	18	18
Sanchez	103	5		14
Santa Maria	45	8	10	7
Terrace	18	4	10	6

* 1958-1972 period.

Return if not delivered
UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SNOW SURVEY UNIT
P.O. BOX 17107
DENVER, COLORADO 80217

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

"The Conservation of Water begins with the Snow Survey"

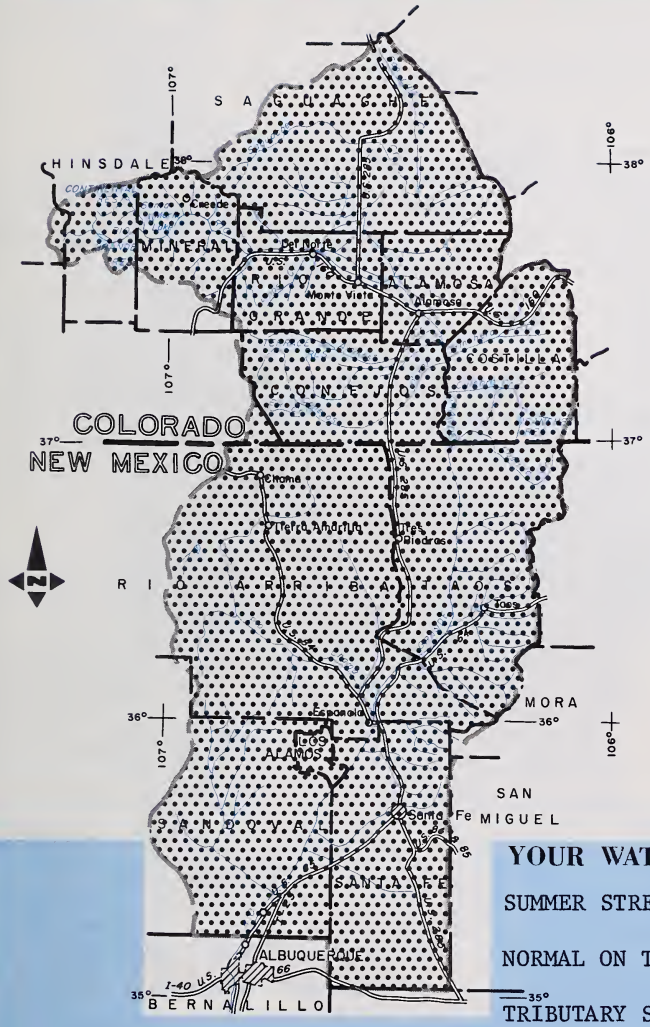
WATER SUPPLY OUTLOOK
FOR THE SOIL CONSERVATION DISTRICTS IN THE
RIO GRANDE WATERSHED IN NEW MEXICO

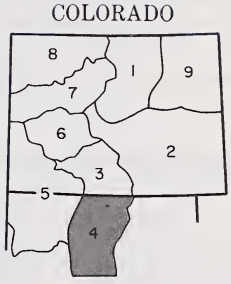
as of

APRIL 1, 1977

U. S. DEPARTMENT OF AGRICULTURE · SOIL CONSERVATION SERVICE

CSU EXPERIMENT STATION, STATE ENGINEERS OF COLORADO AND NEW MEXICO





LEGEND

- Highway
- Drainage
- Town
- Watershed Boundary
- Generally Adequate 100% or more
- Limited Shortage 75%-100%
- Severe Shortage 75% or less

10 0 10 20 30 40
SCALE IN MILES

YOUR WATER SUPPLY

SUMMER STREAMFLOW WILL BE MUCH BELOW NORMAL ON THE RIO GRANDE MAINSTEM. TRIBUTARY STREAMS ARE IN SOMEWHAT BETTER SHAPE BUT ARE STILL EXPECTED TO FLOW BELOW AVERAGE AMOUNTS. THE SNOWPACK HAS BEGUN MELTING. HEAVY SPRING RAINS ARE NEEDED TO IMPROVE SOIL MOISTURE WHICH IS POOR IN MOST AREAS.

This report prepared by

JACK N. WASHICHEK—BERNARD A. SHAFER
SNOW SURVEY UNIT, SOIL CONSERVATION SERVICE
DENVER, COLORADO

Issued by

A. W. HAMELSTROM—STATE CONSERVATIONIST
ALBUQUERQUE, NEW MEXICO

JAMES E. TATUM—AREA CONSERVATIONIST
SANTA FE, NEW MEXICO

U.S. DEPARTMENT OF AGRICULTURE – SOIL CONSERVATION SERVICE

STREAMFLOW FORECASTS (1000 Ac. Ft.) March—July

FORECAST POINT	FORE-CAST	% of Average	Average *
Costilla Creek at Costilla (1)	10	53	19
Jemez River near Jemez	16	55	29
Pecos River at Pecos	35	85	41
Red River at Mouth near Questa	21	71	29
Rio Chama at El Vado	74	39	190
Rio Grande at Otowi (2)	225	39	526
Rio Grande at San Marcial (2)	147	41	355
Rio Hondo near Valdez	6	43	14
Santa Cruz River at Cundiyo	8	62	13

(1) Observed flow plus change in Costilla Reservoir. (2) Observed flow plus change in storage in El Vado and Abiquiu Reservoir.

WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply.

STREAM or AREA	Flow Period	
	Spring Season	Late Season
Embudo Creek	Poor	Poor
Mora River	Poor	Poor
Nambe Creek	Poor	Poor
Rio Ojo Caliante	Poor	Poor
Rio Pueblo de Taos	Poor	Poor
Santa Fe Creek	Poor	Poor

SUMMARY of SNOW MEASUREMENTS

(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average *
Pecos	1	667	100
Red River	2	40	57
Rio Chama	3	25	24
Rio Grande, NM	9	62	50
Rio Hondo	1	52	--

RESERVOIR STORAGE (Thousand Ac. Ft.) END OF MONTH

RESERVOIR	Usable Capacity	Usable Storage		
		This Year	Last Year	Average *
Avalon	5	4	5	--
Caballo	344	91	44	65
Conchas	273	83	83	184
El Vado	195	111	130	6
Elephant Butte	2195	350	651	394
McMillan	34	14	16	--
Sumner	111	2	2	63

* 1958-1972 period.

Return if not delivered
UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SNOW SURVEY UNIT
P.O. BOX 17107
DENVER, COLORADO 80217

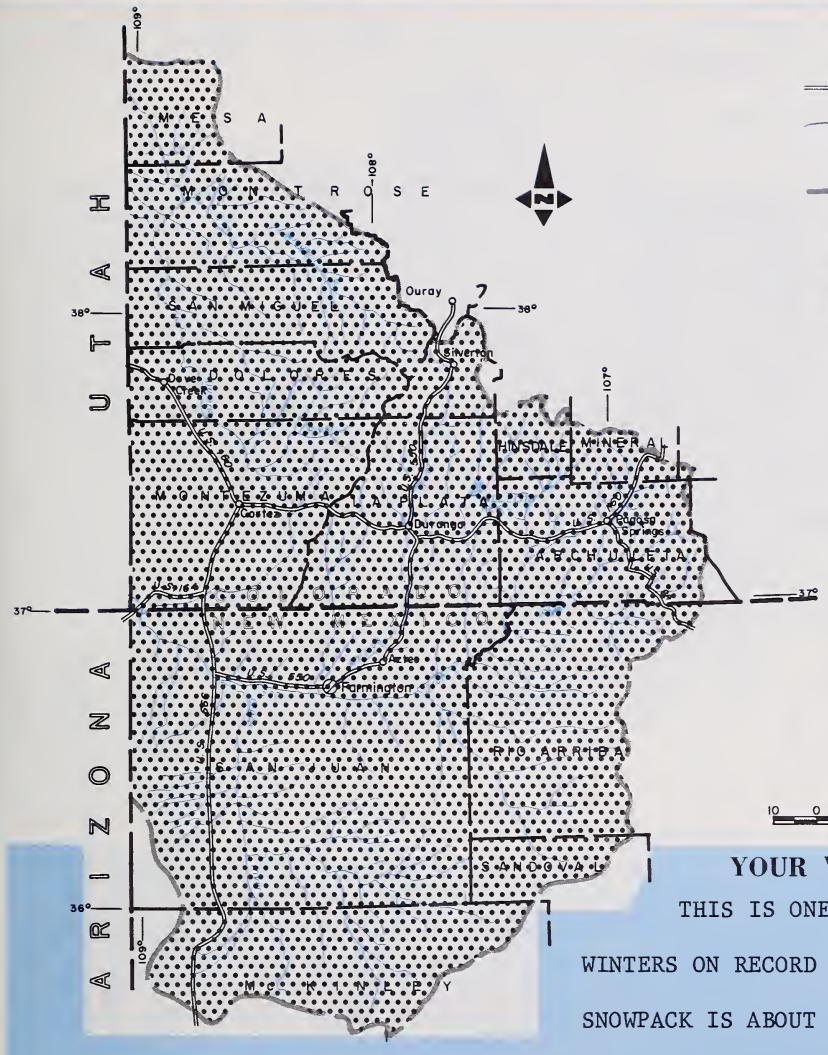
OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

"The Conservation of Water begins with the Snow Survey"

WATER SUPPLY OUTLOOK
FOR THE SOIL CONSERVATION DISTRICTS IN THE
SAN MIGUEL, DOLORES, ANIMAS, AND SAN JUAN WATERSHEDS IN COLORADO AND NEW MEXICO

as of
APRIL 1, 1977

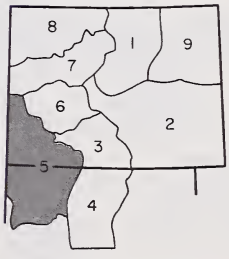
U. S. DEPARTMENT OF AGRICULTURE · SOIL CONSERVATION SERVICE
CSU EXPERIMENT STATION, STATE ENGINEERS OF COLORADO AND NEW MEXICO



LEGEND

- Highway
- Drainage
- Town
- Watershed Boundary
- Generally Adequate 100% or more
- Limited Shortage 75%-100%
- Severe Shortage 75% or less

COLORADO



10 0 10 20 30 40
SCALE IN MILES

YOUR WATER SUPPLY

THIS IS ONE OF THE DRIEST WINTERS ON RECORD FOR THIS AREA. THE SNOWPACK IS ABOUT 75% BELOW AVERAGE. SOILS ARE EXTREMELY DRY. PROSPECTIVE STREAMFLOW WILL BE LESS THAN HALF OF NORMAL UNLESS HEAVY SPRING AND SUMMER PRECIPITATION IS RECEIVED. SEVERE TO MODERATE SHORTAGES OF WATER ARE ANTICIPATED.

This report prepared by

JACK N. WASHICHEK—BERNARD A. SHAFER
SNOW SURVEY UNIT, SOIL CONSERVATION SERVICE
DENVER, COLORADO

Issued by

ROBERT G. HALSTEAD—STATE CONSERVATIONIST
DENVER, COLORADO

A. W. HAMELSTROM—STATE CONSERVATIONIST
ALBUQUERQUE NEW MEXICO

U.S. DEPARTMENT OF AGRICULTURE—SOIL CONSERVATION SERVICE

D. W. GILLASPIE—AREA CONSERVATIONIST
ALAMOSA, COLORADO

JAMES E. TATUM—AREA CONSERVATIONIST
SANTA FE, NEW MEXICO

STREAMFLOW FORECASTS (1000 Ac. Ft.) April—September

FORECAST POINT	FORE-CAST	% of Average	Average *
Animas River at Durango	165	39	423
Dolores River at Dolores	81	35	232
La Plata River at Hesperus	7	31	24
Los Pinos River at Bayfield (1)	85	43	198
Mancos River near Towac (3)	5	36	14
Inflow to Navajo River (1 & 2)	191	32	597
Piedra Creek at Arboles	70	38	185
San Juan River at Carracas	125	35	354
San Miguel River at Placerville	60	46	130

(1) Observed flow plus change in storage in Vallicito Reservoir. (2) April – July (3) March-July

WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply.

STREAM or AREA	Flow Period	
	Spring Season	Late Season
Florida River	Poor	Poor
Hermosa Creek	Poor	Poor
West Dolores River	Poor	Poor
Williams Creek	Poor	Poor

RESERVOIR STORAGE (Thousand Ac. Ft.) END OF MONTH

RESERVOIR	Usable Capacity	Usable Storage		
		This Year	Last Year	Average*
Groundhog	22	7	9	10
Jackson Gulch	10	–	6	5
Lemon	40	17	20	20
Navajo	1696	1102	1063	1192
Vallecito	126	48	60	57

SUMMARY of SNOW MEASUREMENTS

(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average *
Animas	6	28	33
Dolores	4	24	20
San Juan	5	25	30

* 1958-1972 period.

Return if not delivered
UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SNOW SURVEY UNIT
P.O. BOX 17107
DENVER, COLORADO 80217

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

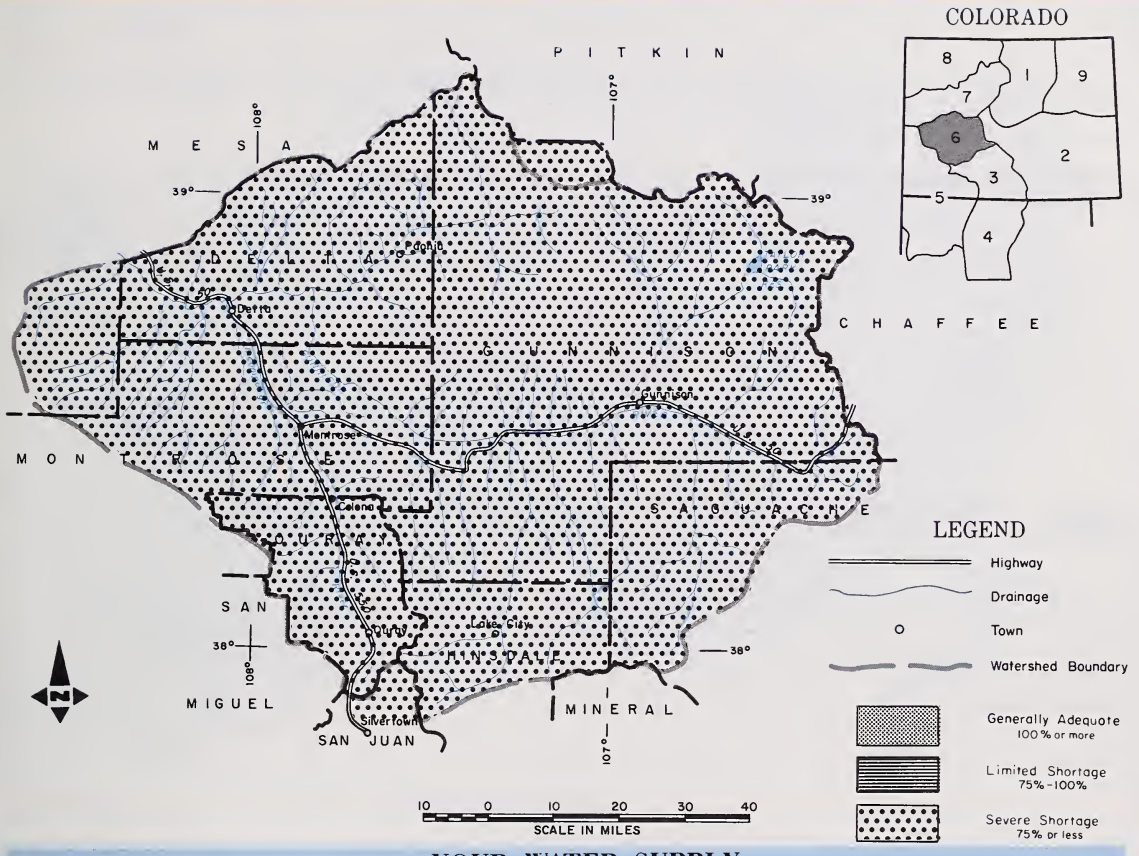
"The Conservation of Water begins with the Snow Survey"

WATER SUPPLY OUTLOOK
FOR THE SOIL CONSERVATION DISTRICTS IN THE
GUNNISON RIVER WATERSHED IN COLORADO

as of

APRIL 1, 1977

U. S. DEPARTMENT OF AGRICULTURE · SOIL CONSERVATION SERVICE
CSU EXPERIMENT STATION, STATE ENGINEERS OF COLORADO AND NEW MEXICO



YOUR WATER SUPPLY

STORMS DURING MARCH IMPROVED THE SNOWPACK ONLY ABOUT 5%. IT REMAINS 60% BELOW NORMAL. THIS HAS BEEN ONE OF THE DRIEST WINTERS ON RECORD. STREAMFLOW FORECASTS REFLECT THIS LACK OF SNOW. THE OUTLOOK IS FOR WATER SUPPLIES NEAR THE MINIMUM OF RECORD UNLESS GREATER THAN NORMAL SPRING AND SUMMER RAINFALL IS RECEIVED. SOILS REMAIN DRY. CARRYOVER RESERVOIR STORAGE IS SLIGHTLY ABOVE NORMAL. WATER SHORTAGES FOR ALL USERS CAN BE EXPECTED.

This report prepared by

JACK N. WASHICHEK—BERNARD A. SHAFER
SNOW SURVEY UNIT, SOIL CONSERVATION SERVICE
DENVER, COLORADO

Issued by

ROBERT G. HALSTEAD—STATE CONSERVATIONIST
DENVER, COLORADO

DEAN F. FISHER—AREA CONSERVATIONIST
GRAND JUNCTION, COLORADO

U.S. DEPARTMENT OF AGRICULTURE—SOIL CONSERVATION SERVICE

STREAMFLOW FORECASTS (1000 Ac. Ft.) April—September

FORECAST POINT	FORE-CAST	% of Average	Average *
Gunnison River inflow to Blue Mesa Reservoir (1)	310	39	793
Gunnison River near Grand Junction (2)	400	34	1184
North Fork of Gunnison (3)	110	42	263
Surface Creek near Cedaredge	8	50	16
Uncompahgre River at Colona	51	38	134

(1) Observed flow plus change in storage in Taylor Reservoir. (2) Observed flow plus change in storage in Blue Mesa, Morrow Point and Taylor Reservoirs. (3) Observed flow plus change in storage in Paonia Reservoir.

WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply.

STREAM or AREA	Flow Period	
	Spring Season	Late Season
Ohio Creek	Poor	Poor
Slate River	Poor	Poor
Taylor River	Poor	Poor
Tomichi Creek	Poor	Poor

RESERVOIR STORAGE (Thousand Ac. Ft.) END OF MONTH

RESERVOIR	Usable Capacity	Usable Storage		
		This Year	Last Year	Average *
Blue Mesa	830	380	445	315
Morrow Point	121	115	115	114
Taylor	106	55	60	65

SUMMARY of SNOW MEASUREMENTS

(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average *
Gunnison	12	42	40
Surface Creek	3	41	37
Uncompahgre	3	42	48

* 1958-1972 period.

Return if not delivered
UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SNOW SURVEY UNIT
P.O. BOX 17107
DENVER, COLORADO 80217

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $ 300

POSTAGE AND FEES PAID
U. S. DEPARTMENT OF
AGRICULTURE
AGR-101

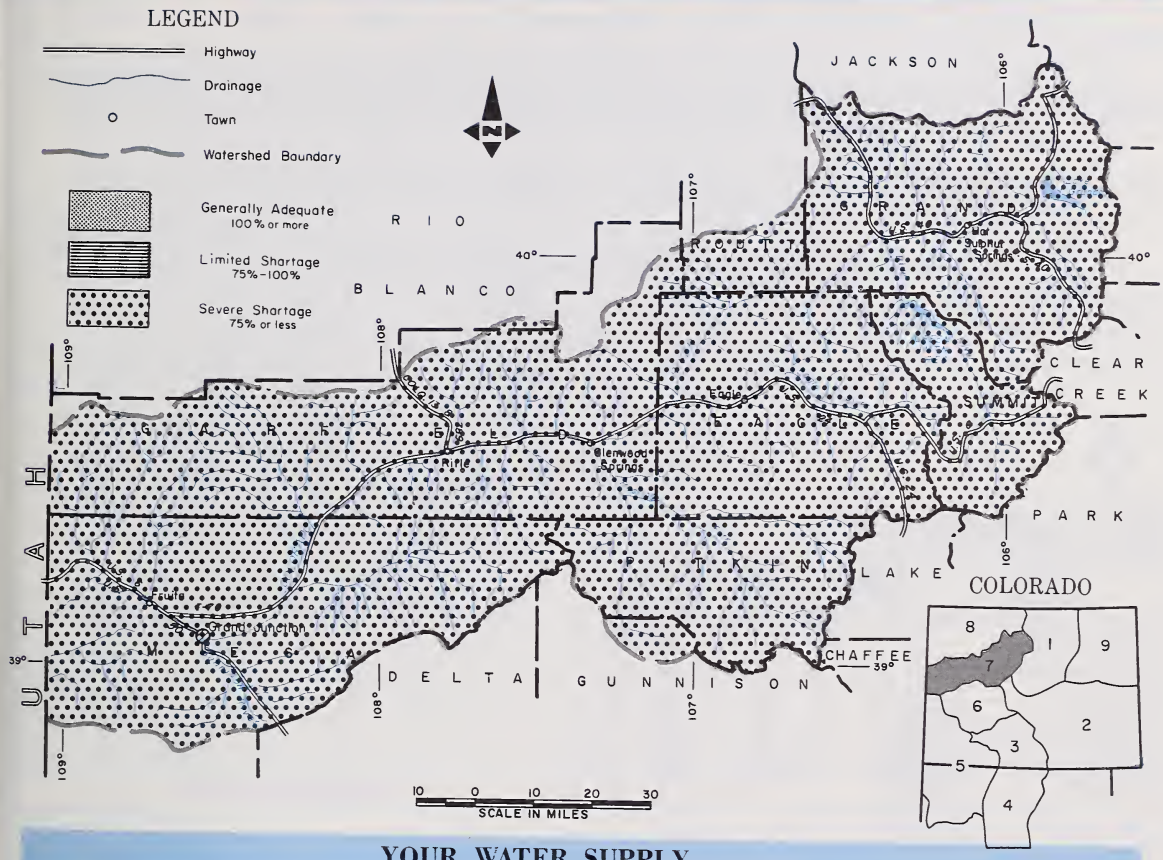
U.S. MAIL

FIRST CLASS MAIL

"The Conservation of Water begins with the Snow Survey"

WATER SUPPLY OUTLOOK
FOR THE SOIL CONSERVATION DISTRICTS IN THE
COLORADO RIVER WATERSHED IN COLORADO
as of
APRIL 1, 1977

U. S. DEPARTMENT OF AGRICULTURE · SOIL CONSERVATION SERVICE
CSU EXPERIMENT STATION, STATE ENGINEERS OF COLORADO AND NEW MEXICO



YOUR WATER SUPPLY

SEVERAL STORMS DURING MARCH IMPROVED THE SNOWPACK ABOUT 15% OF AVERAGE COMPARED TO LAST MONTH. THE AMOUNT OF WATER STORED IN THE PACK IS ABOUT HALF OF WHAT SHOULD NORMALLY BE THERE. THIS MEANS WATER SUPPLIES FOR THE FORTHCOMING SUMMER WILL BE IN THE RANGE OF 40 TO 50% OF AVERAGE. THESE FLOWS ARE FORECAST TO BE NEAR THE MINIMUM OF RECORD. SOIL MOISTURE IS STILL DEFICIENT IN THE VALLEYS. CARRYOVER RESERVOIR STORAGE IS SLIGHTLY BELOW AVERAGE.

This report prepared by

JACK N. WASHICHEK—BERNARD A. SHAFER
SNOW SURVEY UNIT, SOIL CONSERVATION SERVICE
DENVER, COLORADO

Issued by

ROBERT G. HALSTEAD—STATE CONSERVATIONIST
DENVER, COLORADO

DEAN F. FISHER—AREA CONSERVATIONIST
GRAND JUNCTION, COLORADO

U.S. DEPARTMENT OF AGRICULTURE— SOIL CONSERVATION SERVICE

STREAMFLOW FORECASTS (1000 Ac. Ft.) April—September

FORECAST POINT	FORE-CAST	% of Average	Average *
Blue River inflow to Dillon Reservoir	88	52	169
Blue River inflow to Green Mountain Reservoir (1)	130	54	297
Colorado River near Cameo (6)	1090	46	2370
Colorado River near Dotsero (3)	645	45	1434
Colorado River inflow to Granby Reservoir (2)	116	51	228
Roaring Fork at Glenwood Springs (4)	321	45	713
Williams Fork near Parshall (5)	22	35	63
Willow Creek inflow to Willow Creek Reservoir	20	40	47

(1) Observed flow plus diversions through Roberts Tunnel and change in storage in Dillon Reservoir. (2) Observed flow corrected for change in storage in Lake Granby as furnished by U.S.B.R. and diversions by Adams Tunnel and Grand River Ditch. (3) Observed flow plus the changes as indicated in (1), (2) and (5) plus Moffat Ditch and change in Homestake, Williams Fork, Green Mt. and Willow Creek Reservoirs. (4) Observed flow plus diversions through Divide and Twin Lakes Tunnels plus change in storage in Ruedi Reservoir. (5) Observed flow plus diversions through August P. Gumlick Tunnel. (6) Observed flow plus the changes as indicated in (3) and (4).

WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply.

STREAM or AREA	Flow Period	
	Spring Season	Late Season
Brush	Fair	Poor
Eagle River	Fair	Poor
Gypsum Creek	Fair	Poor

RESERVOIR STORAGE (Thousand Ac. Ft.) END OF MONTH

RESERVOIR	Usable Capacity	Usable Storage		
		This Year	Last Year	Average*
Dillon	254	203	225	231
Granby	466	161	279	213
Green Mountain	139	69	58	54
Homestake	43	20	0	15
Ruedi	101	68	55	59
Vega	32	6	12	12
Williams Fork	97	46	42	25
Willow Creek	9	6	6	6

SUMMARY of SNOW MEASUREMENTS

(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average *
Blue River	7	63	58
Colorado	19	57	53
Plateau	3	39	37
Roaring Fork	7	53	54
Williams Fork	3	90	67
Willow	2	54	52

* 1958-1972 period.

Return if not delivered
UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SNOW SURVEY UNIT
P.O. BOX 17107
DENVER, COLORADO 80217

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

POSTAGE AND FEES PAID
U. S. DEPARTMENT OF
AGRICULTURE
AGR-101

U.S. MAIL

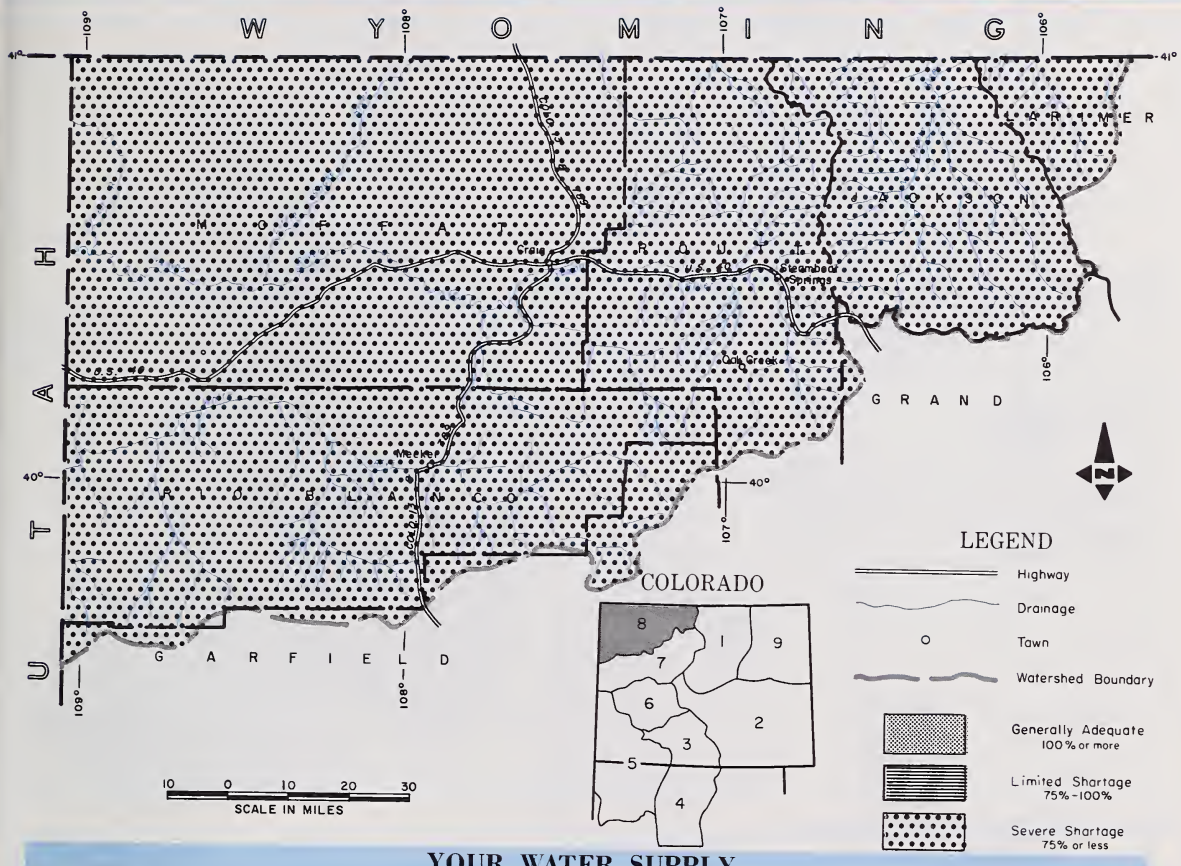
FIRST CLASS MAIL

"The Conservation of Water begins with the Snow Survey"

WATER SUPPLY OUTLOOK
FOR THE SOIL CONSERVATION DISTRICTS IN THE
YAMPA, WHITE, AND NORTH PLATTE RIVER WATERSHEDS
IN COLORADO

as of
APRIL 1, 1977

U. S. DEPARTMENT OF AGRICULTURE · SOIL CONSERVATION SERVICE
CSU EXPERIMENT STATION, STATE ENGINEERS OF COLORADO AND NEW MEXICO



YOUR WATER SUPPLY

A 15% OF NORMAL IMPROVEMENT IN THE SNOWPACK WAS RECORDED DURING MARCH. IT IS NOW ABOUT 55% OF AVERAGE. SNOWFALL CAN STILL INCREASE FOR ANOTHER MONTH AT THE HIGHEST ELEVATIONS BUT VALLEY AND FOOTHILLS REGIONS HAVE COMMENCED MELTING. SUMMER WATER SUPPLIES ARE FORECAST TO BE NEAR HALF OF NORMAL. SOIL MOISTURE GENERALLY REMAINS POOR. HEAVY SPRING RAINS ARE NEEDED TO IMPROVE THE SITUATION.

This report prepared by

JACK N. WASHICHEK—BERNARD A. SHAFER
SNOW SURVEY UNIT, SOIL CONSERVATION SERVICE
DENVER, COLORADO

Issued by

ROBERT G. HALSTEAD—STATE CONSERVATIONIST
DENVER, COLORADO

DEAN F. FISHER—AREA CONSERVATIONIST
GRAND JUNCTION, COLORADO

U.S. DEPARTMENT OF AGRICULTURE— SOIL CONSERVATION SERVICE

STREAMFLOW FORECASTS (1000 Ac. Ft.) April—September

FORECAST POINT	FORE-CAST	% of Average	Average *
Elk River at Clark	120	61	198
Laramie River near Woods	60	47	127
Little Snake River at Lily	135	42	324
North Platte River at Northgate	144	60	240
White River near Meeker	155	52	295
Yampa River near Maybell	450	50	905
Yampa River at Steamboat Springs	321	45	274

WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply.

STREAM or AREA	Flow Period	
	Spring Season	Late Season
Canadian River	Fair	Poor
Hunt Creek	Fair	Poor
Illinois River	Fair	Poor
Michigan River	Fair	Poor
Oak Creek	Fair	Poor
Trout Creek	Fair	Poor

SUMMARY of SNOW MEASUREMENTS

(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average *
Elk	2	60	54
Laramie	3	48	51
North Platte	5	60	61
White	2	50	50
Yampa	6	65	57

* 1958-1972 period.

Return if not delivered
UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SNOW SURVEY UNIT
P.O. BOX 17107
DENVER, COLORADO 80217

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

POSTAGE AND FEES PAID
U. S. DEPARTMENT OF
AGRICULTURE
AGR-101

U.S. MAIL

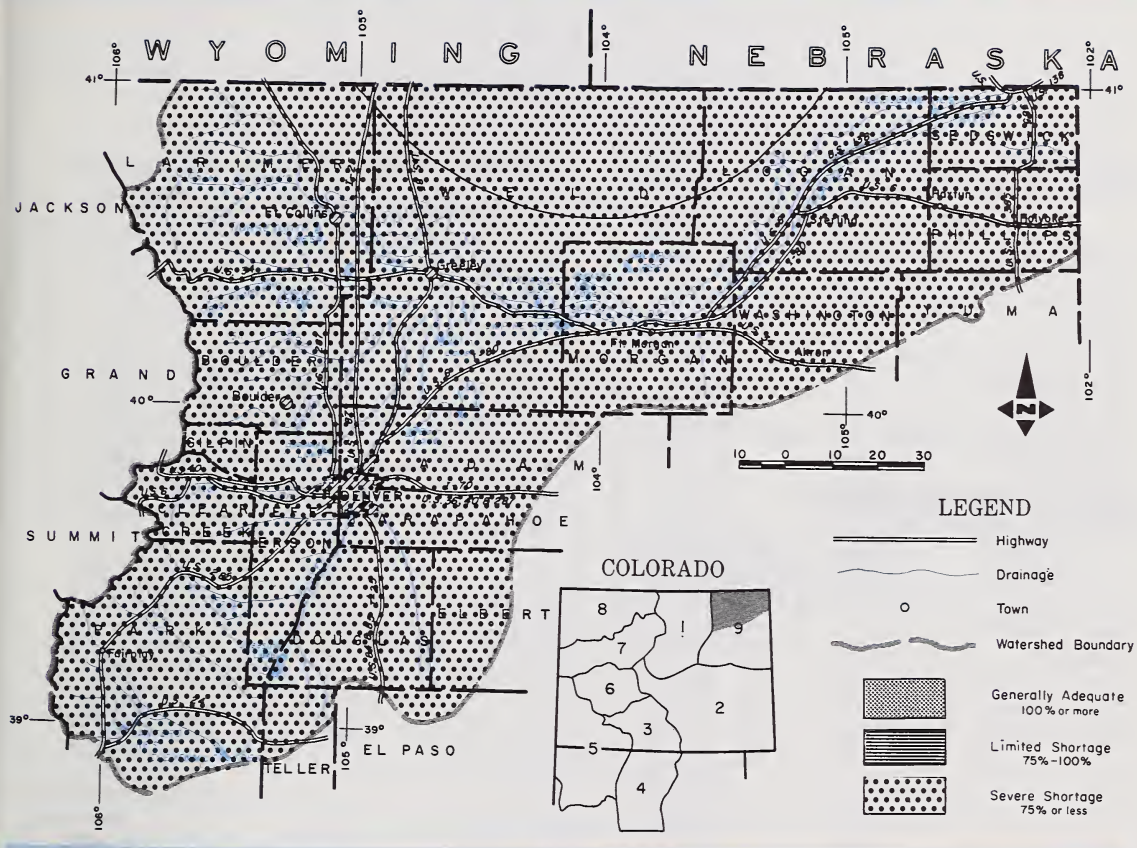
FIRST CLASS MAIL

"The Conservation of Water begins with the Snow Survey"

WATER SUPPLY OUTLOOK
FOR THE SOIL CONSERVATION DISTRICTS IN THE
LOWER SOUTH PLATTE RIVER WATERSHED IN COLORADO

as of
APRIL 1, 1977

U. S. DEPARTMENT OF AGRICULTURE · SOIL CONSERVATION SERVICE
CSU EXPERIMENT STATION, STATE ENGINEERS OF COLORADO AND NEW MEXICO



YOUR WATER SUPPLY

WATER SUPPLIES FOR FRONT RANGE STREAMS ARE ANTICIPATED TO BE EXTREMELY LOW. VERY LITTLE IMPROVEMENT WAS NOTED IN THE MOUNTAIN SNOWPACK DURING MARCH. IT IS NOW ABOUT 60% BELOW AVERAGE. THE LOW SNOWPACK COMBINED WITH DEFICIENT SOIL MOISTURE MEANS A WATER-SHORT SUMMER FOR MOST WATER USERS. THE ONLY BRIGHT SPOT IS CARRYOVER RESERVOIR STORAGE WHICH IS NEAR NORMAL.

This report prepared by

JACK N. WASHICHEK—BERNARD A. SHAFER
SNOW SURVEY UNIT, SOIL CONSERVATION SERVICE
DENVER, COLORADO

Issued by

ROBERT G. HALSTEAD—STATE CONSERVATIONIST
DENVER, COLORADO

RODNEY M. ALT—AREA CONSERVATIONIST
GREELEY, COLORADO

U.S. DEPARTMENT OF AGRICULTURE—SOIL CONSERVATION SERVICE

STREAMFLOW FORECASTS (1000 Ac. Ft.) April—September

FORECAST POINT	FORE-CAST	% of Average	Average*
Big Thompson River at Drake (1)	42	39	107
Boulder Creek at Orodell	22	45	49
Cache La Poudre River at Canyon Mouth (2)	105	43	247
Clear Creek at Golden (3)	50	39	127
Saint Vrain Creek at Lyons (4)	28	37	75

(1) Observed flow plus by–pass to power plants. (2) Observed flow minus trans–basin diversions plus municipal and irrigation diversions. (3) Observed flow minus diversion through August P. Gumlick Tunnel. (4) Observed flow plus change in storage in Price Reservoir.

WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply.

STREAM or AREA	Flow Period	
	Spring Season	Late Season
South Platte from Greeley to Fort Morgan	Poor	Poor
South Platte from Fort Morgan to Sterling	Poor	Poor
South Platte below Sterling	Poor	Poor

SUMMARY of SNOW MEASUREMENTS

(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average*
Big Thompson	5	35	32
Boulder	3	58	48
Cache La Poudre	6	42	43
Clear Creek	6	79	64
Saint Vrain	3	36	29
South Platte	3	40	29

RESERVOIR STORAGE (Thousand Ac. Ft.) END OF MONTH

RESERVOIR	Usable Capacity	Usable Storage		
		This Year	Last Year	Average*
Carter	109	94	102	95
Cheesman	79	33	47	59
Eleven Mile	98	90	97	88
Empire	38	34	32	33
Horsetooth	144	90	121	111
Jackson	35	33	32	34
Julesburg	28	21	23	22
Point of Rocks	70	67	69	66
Prewitt	33	28	27	23
Riverside	58	60	58	58

* 1958–1972 period.

Return if not delivered
UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SNOW SURVEY UNIT
P.O. BOX 17107
DENVER, COLORADO 80217

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

POSTAGE AND FEES PAID
U. S. DEPARTMENT OF AGRICULTURE
AGR–101

U.S. MAIL

FIRST CLASS MAIL

"The Conservation of Water begins with the Snow Survey"

APPENDIX I

SNOW COURSE MEASUREMENTS as of APRIL 1, 1977

SNOW COURSE	CURRENT INFORMATION: DATE OF SURVEY	CURRENT INFORMATION: SNOW DEPTH (INCHES)	CURRENT INFORMATION: WATER CONTENT (INCHES)	PAST RECORD: WATER CONTENT (INCHES) LAST YEAR	PAST RECORD: WATER CONTENT (INCHES) AVG. 58-72
NORTH PLATTE BASIN					
Laramie River					
Deadman Hill	3/29	31	7.2	15.3	16.8
McIntyre	3/29	22	5.6	11.3	10.8
Roach	3/29	39	10.5	21.5	18.2
North Platte River					
Cameron Pass	3/31	45	17.6	33.8	28.7
Columbine Lodge	3/31	45	15.0	20.3	24.0
Northgate	3/31	15	3.5	5.6	6.5
Park View	3/30	23	5.9	9.7	9.2
Willow Cr. Pass (B)	3/30	27	7.2	12.2	12.7
SOUTH PLATTE BASIN					
Boulder Creek					
Baltimore	3/29	14	4.3	5.6	6.8
Boulder Falls	3/29	26	6.7	11.8	13.4
University Camp	3/29	31	7.9	15.0	19.3
Big Thompson River					
Deer Ridge	3/31	0	0.0	4.6	4.8
Hidden Valley	3/31	10	2.5	10.9	10.5
Lake Irene (B)	3/28	38	9.8	19.5	20.9
Long's Peak	3/31	12	3.1	8.9	10.9
Two Mile	3/31	20	4.6	12.8	15.1
Cache La Poudre					
Bennett Creek	3/30	4	1.0	6.7	---
Big South	3/30	0	0.0	0.6	2.1
Cameron Pass	3/31	45	17.6	33.8	28.7
Chambers Lake	3/30	7	2.1	9.9	9.6
Deadman Hill	3/29	31	7.2	15.3	16.8
Hourglass Lake	3/30	10	2.4	7.6	6.7
Joe Wright	3/31	52	16.8	23.4	---
Lost Lake	3/30	20	3.8	11.9	11.8
Red Feather	3/29	8	2.1	7.0	6.9
Clear Creek					
Baltimore (B)	3/29	14	4.3	5.6	6.8
Berthoud Falls	3/29	26	7.2	10.4	13.6
Empire	3/29	18	4.6	6.4	7.8
Grizzly Peak (B)	3/29	40	10.9	15.3	18.9
Loveland Lift	3/29	50	15.6	15.1	21.1
Loveland Pass	3/29	36	11.0	15.1	15.7
St. Vrain River					
Copeland Lake	3/31	2	0.6	3.3	4.4
Ward	3/30	11	2.8	5.1	6.5
Wild Basin	3/31	16	3.1	9.8	11.2
South Platte River					
Como	3/29	7	1.8	6.6	---
Geneva Park	3/28	2	0.3	3.6	3.8
Horseshoe Mt.	3/28	21	4.3	9.6	---
Hoosier Pass	3/30	25	6.8	11.7	12.9
Jefferson Creek	3/29	17	4.8	9.4	9.2
Mosquito	3/28	6	1.1	8.4	---
Trout Creek Pass	3/28	0	0.0	4.7	---
ARKANSAS BASIN					
Arkansas River					
Bigelow Divide	3/29	21	6.3	8.2	6.5
Cooper Hill (B)	NS	--	—	11.1	11.3
East Fork	3/30	22	5.7	9.7	9.8
Four Mile Park	3/30	3	0.6	6.9	5.1
Fremont Pass	3/30	37	10.4	16.9	16.2
Garfield	3/31	21	5.8	10.8	13.0
Hermit Lake	3/31	9	3.4	7.8	---
Monarch Pass	3/31	26	7.5	12.9	17.1
Tennessee Pass	3/30	21	4.4	10.8	10.6
Twin Lakes Tunnel	3/21	16	3.5	10.0	10.7
Westcliffe	3/29	15	4.5	6.4	6.3
Cucharas River					
Apishapa	3/30	18	6.5	8.4	---
Cucharas Creek	3/30	23	6.9	10.0	---
La Veta Pass (B)	3/30	23	6.7	7.7	7.4
Purgatoire River					
Bourbon	3/30	19	5.2	6.6	7.0
RIO GRANDE BASIN-COLO					
Alamosa River					
Silver Lakes	3/30	0	0.0	6.7	5.3
Conejos River					
Cumbres Pass	3/28	23	6.0	18.5	18.0
La Manga	3/28	26	6.8	21.0	---
Platoro	3/30	12	3.6	20.3	16.3
River Springs	3/28	1	0.4	3.8	4.6
Culebra River					
Brown Cabin	3/30	9	2.6	1.6	---
Cottonwood (B)	3/30	5	1.4	---	---
Culebra	3/29	18	5.1	7.7	8.4
La Veta Pass (B)	3/30	23	6.7	7.7	7.4
Trinchera (B)	3/31	18	5.0	7.7	---
Rio Grande					
Cochetopa Pass	3/29	9	2.2	5.0	5.9
Grayback	3/29	17	3.6	20.0	---
Hiway	3/28	22	7.4	29.6	23.8
Lake Humphrey	3/28	4	1.1	9.5	6.1
Love Lake	3/30	13	2.1	12.1	---
Pass Creek	3/28	8	2.4	15.9	9.8
Pool Table	3/31	13	2.1	5.8	6.1
Porcupine	3/30	10	2.0	10.4	10.5
Santa Maria	3/31	0	0.0	3.2	3.6
Upper Rio Grande	3/31	2	0.7	8.7	7.5
Wolf Creek Pass	3/28	27	8.4	33.2	25.5
Wolf Cr. Summit (B)	3/28	30	9.0	32.0	28.3
RIO GRANDE BASIN-NM					
Pecos River					
Panchuela	3/29	6	2.0	0.3	2.0
Rio Chama					
Bateman	3/31	19	4.9	11.4	11.7
Chama Divide	3/29	0	0.0	0.0	1.7
Chamita	3/29	0	0.0	8.2	7.2
Rio Grande					
Alamitos	3/29	13	5.1	3.9	---
Big Tesuque	3/29	1	0.1	2.8	4.6
Cordova	3/30	21	6.3	8.9	10.1
Elk Cabin	3/28	7	1.5	1.1	2.5
Hopewell	3/29	22	6.5	19.7	---
La Cueva	3/29	9	3.6	1.8	---
Palo	3/28	12	3.8	8.0	---
Payrole	3/29	0	0.0	6.0	6.8
Quemazon	3/30	19	5.0	5.7	9.0
Rio En Medio	3/30	14	4.4	6.8	7.4
Sandoval	3/29	13	3.8	2.1	4.2
Senorita Divide	3/31	4	1.3	1.1	---
Taos Canyon	3/28	11	3.0	4.9	3.9
Tres Ritos	3/29	7	2.4	4.6	4.8
North Costilla	3/30	16	3.8	---	---
Powderhouse	3/30	7	1.6	---	---
Bernal Trail	3/28	17	4.2	---	---
Rio Hondo					
Taos Powderhorn	3/28	45	15.5	29.7	---
Red River					
Hematite Park (B)	3/30	8	2.2	4.3	3.5
Red River	3/30	9	3.0	8.8	5.6
Red River #2	3/30	10	3.2	8.0	---

NOTE: NS - No Survey
(B) - On Adjacent Drainage

GPO 840-136

APPENDIX I

SNOW COURSE MEASUREMENTS as of APRIL 1, 1977

SNOW COURSE	CURRENT INFORMATION: DATE OF SURVEY	SNOW DEPTH (INCHES)	WATER CONTENT (INCHES)	PAST RECORD: WATER CONTENT (INCHES) LAST YEAR	AVG. 58-72
SAN JUAN-DOLORES BASIN					
Animas River					
Cascade	3/30	4	1.6	15.1	10.2
Lemon	3/29	0	0.0	8.7	---
Mineral Creek	3/30	20	5.6	15.8	15.4
Molas Lake	3/30	7	1.8	14.6	12.6
Purgatory	3/31	20	5.2	23.6	---
Red Mt. Pass (B)	3/30	48	13.7	32.8	31.5
Silverton Sub-Sta.	3/30	0	0.0	9.8	5.2
Spud Mountain	3/30	15	5.0	26.9	23.1
Dolores River					
Lizard Head	3/30	16	4.1	17.8	17.2
Lone Cone	3/30	23	6.6	20.6	---
Ophir Loop	3/29	29	7.7	12.0	---
Rico	3/30	0	0.0	4.6	6.1
Telluride	3/29	5	1.4	8.0	6.5
Trout Lake	3/29	20	5.1	14.7	13.7
San Juan River					
Chama Divide (B)	3/29	0	0.0	0.0	1.7
Chamita (B)	3/29	0	0.0	8.2	7.2
Upper San Juan	3/28	31	9.9	34.2	28.6
Wolf Cr. Pass (B)	3/28	27	8.4	33.2	25.5
Wolf Cr. Summit	3/28	30	9.0	32.0	28.3
GUNNISON BASIN					
Gunnison River					
Alexander Lake	3/30	31	8.5	21.1	22.8
Blue Mesa	3/31	14	3.9	8.1	7.2
Butte	3/30	22	5.5	14.0	---
Cochetopa Pass (B)	3/29	9	2.2	5.0	5.9
Crested Butte	3/30	20	6.3	14.2	13.0
Keystone	3/28	29	8.1	19.5	20.0
Lake City	3/28	9	2.1	7.0	8.0
Mesa Lakes (B)	3/25	30	7.0	15.3	17.6
McClure Pass	3/30	22	7.9	16.9	15.1
Park Cone	3/29	10	2.2	11.3	10.6
Park Reservoir	3/30	32	8.5	22.5	23.8
Porphyry Creek	3/31	29	8.0	14.1	16.9
Tomichi	3/31	19	5.3	10.5	12.6
Surface Creek					
Alexander Lake	3/30	31	8.5	21.1	22.8
Mesa Lakes	3/25	30	7.0	15.3	17.6
Park Reservoir	3/30	32	8.5	22.5	23.8
Uncompahgre River					
Ironton Park	3/31	26	8.2	14.3	10.2
Red Mountain Pass	3/30	48	13.7	32.8	31.5
Telluride (B)	3/29	5	1.4	8.0	6.5
COLORADO BASIN					
Blue River					
Blue River	3/30	17	5.1	8.0	8.5
Fremont Pass	3/30	37	10.4	16.9	16.2
Frisco Pass	Discontinued			6.8	7.4
Grizzly Peak	3/29	40	10.9	15.3	18.9
Hoosier Pass (B)	3/30	25	6.8	11.7	12.9
Shrine Pass	3/30	40	10.7	16.7	18.1
Snake River	3/29	14	3.6	7.0	7.9
Summit Ranch	3/29	20	4.4	6.6	7.1

SNOW COURSE	CURRENT INFORMATION: DATE OF SURVEY	SNOW DEPTH (INCHES)	WATER CONTENT (INCHES)	PAST RECORD: WATER CONTENT (INCHES) LAST YEAR	AVG. 58-72
Colorado River					
Arrow	3/30	33	7.8	13.9	13.2
Berthoud Pass	3/30	42	9.9	14.0	15.9
Berthoud Summit	3/29	45	13.8	16.1	19.7
Cooper Hill	NS	--	--	11.1	11.3
Fiddler Gulch	NS	--	--	13.5	14.5
Glenmar Ranch	3/30	24	6.5	8.8	8.5
Gore Pass	3/29	20	4.9	11.5	10.2
Grand Lake	3/28	18	4.5	8.0	8.2
Lake Irene	3/28	38	9.8	19.5	20.9
Lapland	3/28	18	4.1	8.0	10.4
Lulu	3/30	39	10.4	19.4	18.7
Lynx Pass	3/29	26	6.0	13.8	12.8
McKenzie Gulch	3/29	10	2.4	6.8	5.0
Middle Fork	3/30	24	6.3	8.7	9.9
Milner	3/28	24	6.4	11.3	13.6
North Inlet	3/30	15	3.9	7.2	8.7
Pando	3/30	18	4.2	9.7	10.3
Phantom Valley	3/29	17	4.5	8.3	10.8
Ranch Creek	3/30	23	4.8	8.6	9.9
Tennessee Pass (B)	3/30	21	4.4	10.8	10.6
Vasquez	3/29	29	8.2	11.7	12.9
Roaring Fork					
Aspen	3/29	45	12.0	18.7	17.1
Independence Pass	3/21	36	9.1	15.0	17.5
Ivanhoe	3/31	35	9.6	18.1	18.1
Kiln	3/28	27	6.2	13.7	---
Lift	3/29	39	10.2	17.0	17.8
McClure Pass	3/30	22	7.9	16.9	15.1
Nast	3/28	9	2.1	6.5	5.6
North Lost Trail	3/30	18	6.2	16.3	14.6
Williams Fork River					
Glenmar Ranch	3/30	24	6.5	8.8	8.5
Jones Pass	3/31	37	10.1	14.0	15.5
Middle Fork	3/30	24	6.3	8.7	9.9
Willow Creek					
Granby	3/30	15	3.4	7.3	7.5
Willow Cr. Pass	3/30	27	7.2	12.2	12.7
Plateau Creek					
Mesa Lakes	3/25	30	7.0	15.3	17.6
Park Reservoir	3/30	32	8.5	22.5	23.8
Trickle Divide	3/30	37	9.2	25.0	25.9
YAMPA BASIN					
Elk River					
Elk River	3/29	36	9.4	15.4	17.8
Hahn's Peak	3/28	28	7.6	12.7	13.7
White River					
Burro Mountain	3/28	38	9.5	19.1	17.2
Rio Blanco	3/29	28	6.9	13.9	15.7
Yampa River					
Bear River	3/30	24	4.9	11.6	11.2
Columbine (B)	3/31	45	15.0	20.3	24.0
Crosho	3/30	34	8.2	13.4	---
Dry Lake	3/29	39	11.1	17.0	20.0
Lynx Pass (B)	3/29	26	6.0	13.8	12.8
Rabbit Ears	3/31	47	13.9	19.4	25.9
Tower	3/29	86	25.4	40.2	---
Yampa View	3/31	32	9.7	12.6	14.6

NOTE: NS - No Survey
(B) - On Adjacent Drainage

LIST of COOPERATORS

The following organizations cooperate in snow surveys for the Colorado, Platte, Arkansas and Rio Grande watersheds. Many other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.

STATE

Colorado State Engineer
New Mexico State Engineer
Nebraska State Engineer
Colorado State University Experiment Station
Rocky Mountain Forest and Range Experiment Station

FEDERAL

Department of Agriculture

- Forest Service
- Soil Conservation Service

Department of Interior

- Bureau of Reclamation
- Geological Survey
- National Park Service
- Indian Service

Department of Commerce

- NOAA, National Weather Service

Defence Department

- Army Engineer Corps

Atomic Energy Commission

INVESTOR OWNED UTILITIES

Colorado Public Service Company
Public Service Company of New Mexico

MUNICIPALITIES

City of Denver
City of Boulder
City of Greeley
City of Fort Collins

WATER USERS ORGANIZATIONS

Arkansas Valley Ditch Association
Colorado River Water Conservation District

IRRIGATION PROJECTS

Farmers Reservoir and Irrigation Company
San Luis Valley Irrigation District
Santa Maria Reservoir Company
Costilla Land Company
Uncompahgre Valley Water Users' Association
Twin Lakes Reservoir and Canal Company
Trinchera Irrigation Co.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
SNOW SURVEY UNIT
P.O. BOX 17107
DENVER, COLORADO 80217

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE, $300

POSTAGE AND FEES PAID
U. S. DEPARTMENT OF
AGRICULTURE
AGR-101

U.S. MAIL

FIRST CLASS MAIL

FEDERAL - STATE - PRIVATE

COOPERATIVE SNOW SURVEYS

Furnishes the basic data necessary for forecasting water supply for irrigation, domestic and municipal water supply, hydro-electric power generation, navigation, mining and industry

"The Conservation of Water begins with the Snow Survey"